How Earth's Climate and Physical Features Shape Global Biodiversity

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Explore how Earth's physical structure and climate systems drive biodiversity, species distribution, and life evolution — vital insights for students and researchers.

Introduction

Our planet's climate and physical makeup are key forces shaping all life on Earth. From tectonic movements to climate systems and biogeographic boundaries, these factors influence where species live, thrive, or disappear.

Understanding how Earth's climate and physical features interact helps scientists predict changes in biodiversity and ecosystems.

For students and researchers alike, grasping this complex relationship is crucial for

tackling global challenges like climate change and species extinction.

This blog post, *How Earth's Climate and Physical Features Shape Global Biodiversity*, offers an unedited excerpt from a Zoology thesis that explores these ideas in depth. The focus keyword **Earth's Climate** appears here because it is central to this discussion.

Dive in to learn how landforms, atmospheric patterns, and ancient climate shifts have determined the variety of life around us. Whether you study zoology, environmental science, or just love learning about our planet, this read will expand your understanding of Earth's dynamic systems.

Article

Physical and Climatic Facts Related With The Earth

"Our earth is a orange shaped huge rocky ball which is a part of a family of planets i.e. family of the solar system which has nine known planets moving around the Sun travels along an oval-shaped path called an orbit. Earth the third planet from the Sun takes 365 ¼ days or one year time to make a complete journey on this orbit.

Earth also turns around its 66.50 inclined axis like a spinning top and takes 24 hours & it is called daily motion and this gives us day & night where as annual motion of the earth provides us seasons. The earth is tilted on its axis away from the vertical by 23 ½0. Its diameter is 12,756 km, mass 5,976 million 3 tons, temperature 70-550C.

The earth is 4.6 billion years old having 71% of the surface of the earth is covered by sea and only the remaining 29% is land. As we know life evolved over the last 40-50 millions year ago on the earth. The earth's surface is constantly being transformed, it is uplifted, folded and faulted by tectonic forces, weathered and eroded by wind, water and ice. Sometimes change is dramatic, the spectacular results of earthquakes or floods.

Earth's Layers and Zones

Its outer rocky layer is called Lithosphere, Water covered as hydrosphere

and wrapped in a envelope of air including gases vapour as atmosphere. It was due to volcanic eruption produced gases which formed the earth's atmosphere in which main gases are oxygen, nitrogen, carbon dioxide and water vapour. One another zone of living things on the earth is known as biosphere. The earth is only planet where life exists due to presence of oxygen and water.

There are three major relief features on this earth and they are plain, plateau and mountain. Variety of flora and fauna found on these relief features which includes valleys and within water and sea also as per their suitability. There are also numerous rivers flowing on the earth with a huge number of lakes and ponds and it all invites animals on these sites. The water area of the earth is divided into oceans, seas, bays, gulfs, valleys, trenches, continental shelf, slopes & ocean currents.

Earth's Geography and Climate Zones

The earth has been divided into (3600 longitudes and 1800 Latitudes and they are as follows northern hemisphere (equator 00-900 N. Lat.), Southern Hemisphere (equator 00-900 S. Lat.), eastern hemisphere (Greenwich 00-1800 E Long.), Western hemisphere (Greenwich 00-1800 W Long.) 00- 23 1/20 N. Lat (Tropic of Cancer) and 00 S-23 1/20 S. Lat. Tropic of the Capricorn) is the hottest zone of the world known as Torrid zone or tropical region.

Areas in both northern & southern hemispheres 23 ½0 to 66 ½ latitudes (cold polar circle) is known as north & south temperate zone and 66 ½0 Lat to 900 Lat. (Pole) is known Arctic circle in northern & Antarctic circle in southern hemisphere which is extremely cold.

There are seven continents on these earth namely North America, South America, Europe, Africa, Asia, Australia & Antarctica and three ocean namely Pacific ocean, Atlantic ocean & Indian oceans any many seas, bays & gulfs.

In ancient past all the present land masses of the earth were united and were known as Pangea and there was only one ocean surrounded the Pangea which was called Panthlasa. Millions years back they drifted and separated with flora & fauna and taken the shape of the world of today.

This is one of the major reason of the dispersal & distribution of flora & fauna in the world. The all land masses of the world are like plates and floating in glassy magma.

Human and Biological Presence

The earth has a human population of more than 5000 million people with about 200 countries on the earth. Millions of species of animals, birds and vegetation is also inhabiting this earth with suitable climatic & surface conditions which have been mentioned above.

Factors that Determine Earth's Climate

Climate is generally defined as average weather. The climate system is a complex, interactive system consisting of the atmosphere, land surface, snow and ice, oceans and other bodies of water, and living things. The atmospheric component of the climate system most obviously characterises climate;

climate is often defined as 'average weather'. Climate is usually described in terms of the mean and variability of temperature, precipitation and wind over a period of time, ranging from months to millions of years (the classical period is 30 years).

...
(Full section continues up to Predicting The Impacts Of Climate Change On The Distribution Of Species: Bioclimate Envelope)
(Excerpt ends on page 50)

(Due to length, the rest stays exactly as in the file, formatted as blockquote with H3 subheadings for logical flow)

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